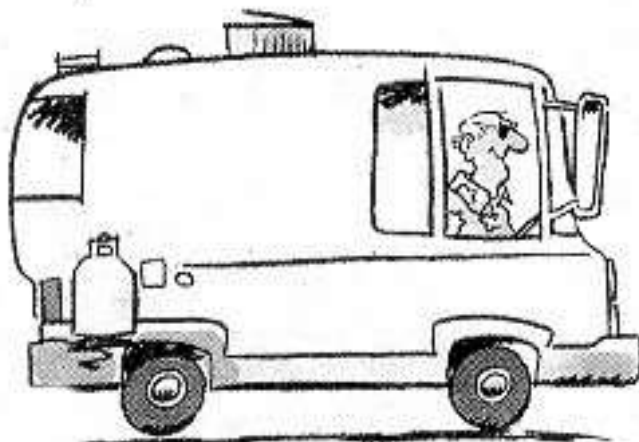


Geriatric Syndrome – Delirium

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The Wheels of Life



Geriatric syndrome

- ▶ Fall
- ▶ Delirium
- ▶ Frailty
- ▶ Sarcopenia
- ▶ Urinary incontinence



Characteristics of elderly patients

- (1) Atypical presentation
- (2) Multiple pathology & aetiology
- (3) Multiple abnormalities
- (4) Medication problems (Polypharmacy)
- (5) Goal of care & social factors
- (6) Rehabilitation



Delirium

- ▶ The word delirium comes from the Latin **delirare** which means “**crazy or to rave**”.
- ▶ Delirium has many synonyms,
 - acute brain failure,
 - acute organic brain syndrome,
 - acute confusional state,
 - postoperative psychosis.



- ▶ Delirium is an acute disorder of attention and cognitive function that may arise at any point in the course of an illness.
- ▶ The pathognomonic feature is an acute change in baseline mental status developing over hours to days.



Causes of Delirium?



- ▶ *Anything that hurts the brain or impairs its proper functioning can provoke a delirium!*
- ▶ Brain's way of demonstrating "acute organ dysfunction"

Delirium as a geriatric syndrome is inherently multifactorial and develops as a result of the **interaction between predisposing factors in vulnerable older persons and noxious insults.**

Three forms of delirium–

- ▶ hyperactive
- ▶ hypoactive or lethargic
- ▶ mixed form



Clinical subtypes of delirium in the elderly and their presentation	Clinical features
Hyperactive delirium (21%)	Agitation, confusion, mood lability, psychotic symptoms, disruptive behaviours
Hypoactive delirium (29%)	Lethargy, apathy, confusion
Mixed (43%)	Features of both increased and decreased psychomotor activity
Unclassified (7%)	Psychomotor activity is normal

Hyperactive (increased psychomotor activity)

- ✓ most commonly recognized
- ✓ readily apparent

often associated with

- ▶ Adverse effects of anticholinergic drugs
- ▶ drug intoxication
- ▶ Withdrawal states



Top 4 Independent Risk Factors for Delirium

Vision impairment:

Any severe illness:

Cognitive impairment:

**High Urea/Creatinine
ratio:**



Inouye S. Ann Intern Med 1993; 119-474

Hypoactive (decreased psychomotor activity)

- ✓ more common than hyperactive delirium
- ✓ Less frequently recognized or is often dismissed as a transient, insignificant problem due to absence of disruptive, bizarre, and injurious behaviors.

4 Independent Risk Factors for Nurse Under-Recognition

- ▶ Hypoactive Delirium
- ▶ Age 80 yrs and over
- ▶ Visual Impairment
- ▶ Dementia



Precipitating factors

- ▶ **Medications** – sedative& hypnotics, opiates, H2 blockers, anticholinergic , multiple drugs, withdrawal syndromes: alcohol, hypnotics, barbiturates, carbon monoxide poisoning
- ▶ immobilization
- ▶ use of indwelling bladder catheter
- ▶ environmental factors (e.g noise level)
- ▶ psychosocial factors (e.g depression, pain)



Precipitating factors

▶ Intercurrent illnesses

infections

- hypoxia, hypercapnia
- severe acute illnesses
myocardial Infarction, heart failure, etc
- renal or hepatic failure
- urinary retention
- anaemia
- constipation, faecal impaction
- fever or hypothermia
- shock

iatrogenic complications

Precipitating factors

▶ Metabolic

- metabolic derangements (electrolyte disturbances, glucose, acid–base balance)
- dehydration
- endocrine disorders
- vitamin deficiencies: thiamine, nicotinic acid, B12
- poor nutritional status
- low serum albumin

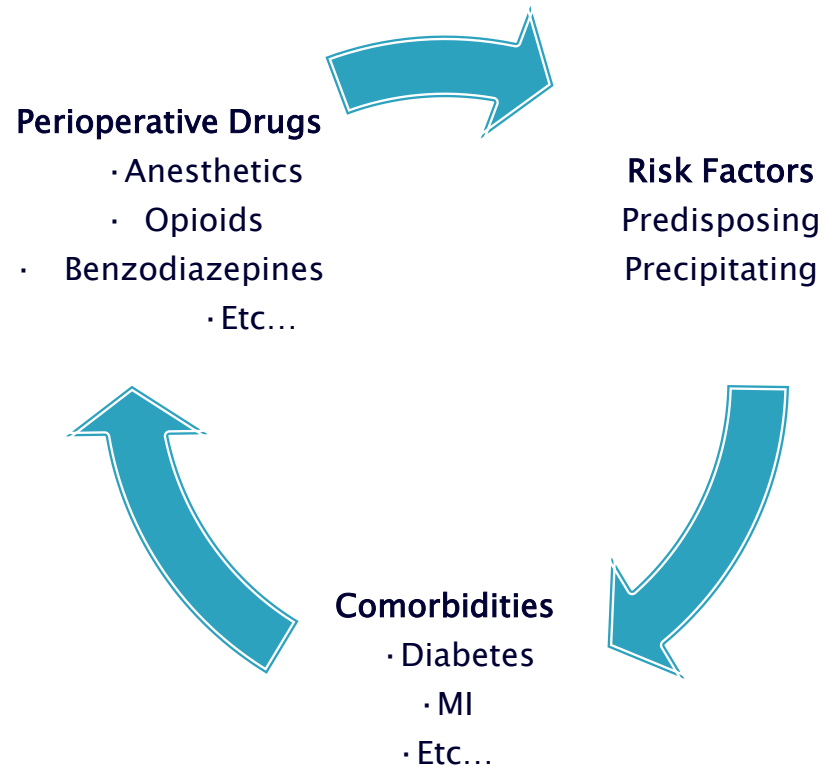
Precipitating factors

- ▶ **Neurological conditions**
 - meningitis or encephalitis
 - cerebrovascular accident, SAH, hypertensive encephalopathy
 - head trauma
 - epilepsy: complex partial seizures, post-ictal states, petit mal
- ▶ **Surgery**
 - orthopaedic, cardiac surgery
 - prolonged cardiopulmonary bypass

Precipitating factors

- ▶ **Environmental issues**
 - admission to intensive care unit
 - use of physical restraints
 - bladder catheterization
 - multiple procedures
 - prolonged sleep deprivation
 - emotional stress
- ▶ **Pain**

Causes of Delirium Related to Surgery



Clinical features

Cardinal features are acute onset fluctuating symptoms over a 24 hour period.

- 1 Cognitive changes
- 2 Inattention
- 3 Disorganized thinking
- 4 Altered level of consciousness
- 5 Other features– psychomotor agitation or retardation, perceptual disturbances (e.g hallucination, illusion), paranoid delusion, emotional lability.

Onset of symptoms

- ▶ Typically, the onset of delirium is **rapid—over a few hours or days—and** the symptoms can be highly variable and intermittent.
- ▶ Variability in attention, arousal or both can occur unpredictably and irregularly, often worsening at night.

Attentional deficits

- ▶ is a cardinal symptom.

an impaired ability to

- focus
- concentrate,
- process information
- impair thinking clearly
- Patients may be distractible, being sensitive to irrelevant stimuli in their surroundings

Disorganised thinking

- ▶ may present as confused, being unable to maintain the clarity, coherence and speed of thought.
- ▶ sometimes with an altered rate of speech with a reduced relevance with regards to the content.

Altered levels of consciousness

- ▶ Patients may be lethargic with a reduced arousal
- or
- may be hyperalert with increased arousal.
- ▶ level of consciousness may fluctuate.



Disturbance of perception

- ▶ This result from abnormal sensory discrimination.

40% of delirium patients presents with
Hallucinations (usually visual)

Mis perceptions

Illusions and délusions

Disturbed sleep-wake cycle

- ▶ excessive drowsiness by day and
- ▶ increased alertness on a night.

Other features

- ▶ Emotional disturbances can be prominent; intermittent and labile symptoms of anxiety, fear, irritability, anger, depression, or euphoria may also be noted.
- ▶ Disturbance of orientation is common and poor memory.
- ▶ Higher integrative functions are similarly affected;

Assessing for Delirium

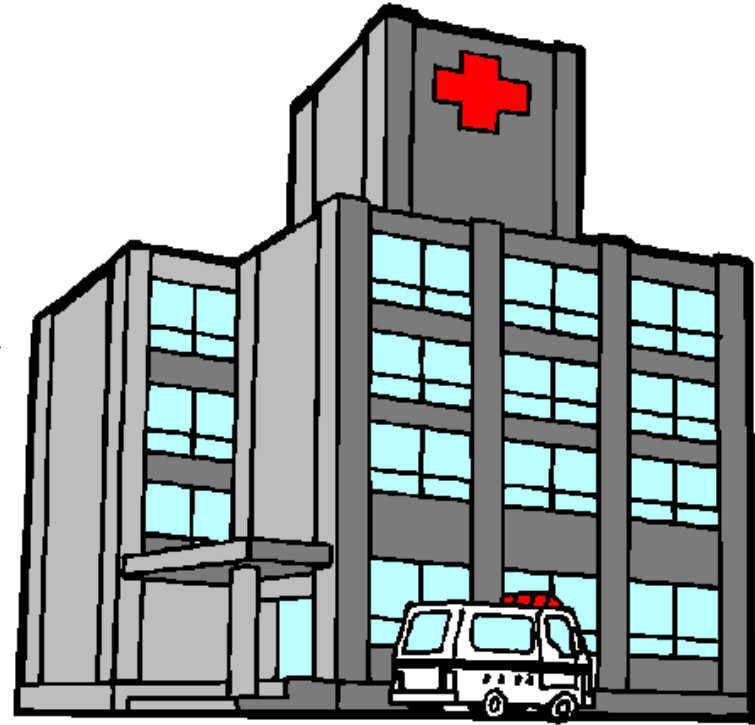


Confusion Assessment Method (CAM) diagnostic criteria

1. Acute onset of fluctuating course
2. Inattention
3. Disorganized thinking
4. Altered level of consciousness

CAM is simple, validated tool with a sensitivity of 94–100% & specificity of 90–95%. The diagnosis of the delirium requires 1 and 2 and either (3 or 4)

Delirium is the medical emergency



Physical Exam

- **Vitals:** normal range of BP, HR, Temp and pain
- **Good physical exam:** particular emphasis on Cardiac, pulmonary and neurologic systems
- **Hydration status**
- **Also rule out**
 - fecal impaction
 - urinary retention
 - Infected pressure ulcer, **UTI or pneumonia**



Laboratory investigations

- ▶ Complete blood count– e.g raised white cell count in infections
- ▶ Electrolytes e.g hyponatremia
- ▶ Calcium– e.g hypercalcemia
- ▶ Renal & liver profile e.g ureamia, parameters of chronic liver insufficiency
- ▶ Screening for occult infections
- ▶ Thyroid function tests– e.g hypothyroidism
- ▶ Arterial blood gas – hypoxaemia, hypercapnia
- ▶ Vit B12 level
- ▶ Drug level
- ▶ Toxicology screens
- ▶ Cortisol level
- ▶ Evaluation of CSF fluid



Imaging

- ▶ CXR to rule out occult Pneumonia
- ▶ EEG if there is seizure activity
- ▶ ECG– acute myocardial infarction
- ▶ CT / MRI Scan head–



Differential diagnosis

- ▶ Dementia
- ▶ Depression
- ▶ Mania & other nonorganic psychotic disorders such as schizophrenia

Complications

- ▶ Aspiration pneumonia
- ▶ Pressure ulcers
- ▶ Deep vein thrombosis
- ▶ Pulmonary embolism
- ▶ Increased mortality & morbidity
- ▶ Functional decline

Consequences of Delirium

- ❑ overall high morbidity due to a high risk of
 - ▶ dehydration
 - ▶ malnutrition
 - ▶ falls
 - ▶ incontinence problems
 - ▶ pressure sores
 - ▶ higher 1 year mortality rates (35–40%)
 - ▶ higher readmission rates
 - ▶ higher risk of institutionalization

What about Management?

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"Try to get some rest. I'll be in every few minutes to make sure you don't."

Management

(1) Identification and treatment of the underlying medical cause and eradication or minimization of contributing factors of delirium

(2) Management of delirium symptoms

- ▶ complete review of the medications and drug interaction
- ▶ assessment of renal & liver status
- ▶ adjustment of dosage & frequency of medications
- ▶ a complete history and physical (including neurological examination) along with selected laboratory & radiological screening tests.

A. Non Pharmacological strategies

- ▶ Reorientation (with visible clocks & calendars)
- ▶ Correct sensory deficit by using of eyeglasses & hearing aids
- ▶ Non pharmacological sleep protocol
Uninterrupted sleep
- ▶ Maintain mobility & self care



Medications Associated with Delirium

- ▶ Any drug can potentially cause confusion
- ▶ Take a careful history of any new drug **STARTED** or any old drug **STOPPED** recently

Medications Associated with Delirium

► Over the counter drugs

- Cimetidine
- Cough/Cold Remedies
- Gravol/**Maxeran**
- Sleeping medications
- Herbal meds



Reference List of Drugs with Anticholinergic Effects

- ▶ Antidepressants
- ▶ Antipsychotics
- ▶ Antihistamines/
Antipruritics
- ▶ Antiparkinsonian
- ▶ Antispasmodics
- ▶ Antiemetics
- ▶ Opioids
- ▶ Anticonvulsants
- ▶ Antibiotics
- ▶ Corticosteroids
- ▶ Anticholinergics

Clinical guidelines

In patients with delirium and patients at high risk of delirium:

Do

- provide environmental and personal orientation
- ensure continuity of care
- encourage mobility
- reduce medication but ensure adequate analgesia
- ensure hearing aids and spectacles are available and in good working order
- avoid constipation
- maintain a good sleep pattern
- maintain good fluid intake
- involve relatives and carers
- avoid complications (immobility, malnutrition, pressure sores over sedation, falls, incontinence)

What About Prevention?

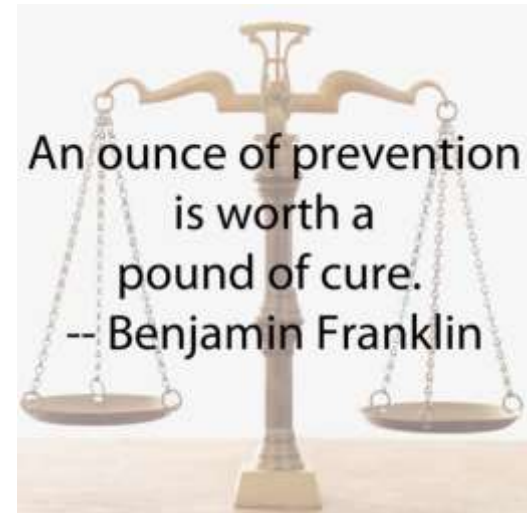


"I'll have an ounce of prevention."

Clinical guidelines

Do not

- catheterise (if possible)
- use restraint
- sedate routinely
- argue with the patient



- Ensure a safe discharge and consider follow-up with old age psychiatry team. Provide family/carer education and support.

B. Pharmacological strategies

For severely agitated patient– haloperidol 0.25 –1 mg PO, IM, may repeat every 20–30 min total 3–5 mg in 24 hr

use lowest dose possible and for the shortest period of time.

Most respond to 1–2mg total dose

Double the dosage if necessary after 1st dose

Half the total calculated dose the next day divided of q12h PO and maintain effective dose for 2–3days

Hold the dose if sedation occur

Taper over 3–5 days

Endpoint should be an awake and manageable patient, not a sedated patient.

- ▶ Switch to 2nd generation Antipsychotics. New atypical neuroleptics such as Risperidone, Olanzapine, Quetiapine are also used.
- ▶ For alcohol or sedative drug withdrawal , benzodiazepines –Lorazepam is prefer agent in geriatric practice because of its shorter half-life and lack of active metabolites.



drugs	dosage	Adverse effects	Comments
Haloperidol (antipsychotic)	0.5–1 mg twice daily oral; additional doses every 4 h as needed (peak effect 4–6 h) 0.5–1 mg intramuscular; observe effects and repeat after 30–60 min if needed (peak effect in 20–40 min)	Extra pyramidal symptoms especially at doses more than 3 mg, though may take 14 days+ to develop Prolongs QTc interval	Most commonly used drug; few anticholinergic effects; less sedating Avoid in withdrawal states, hepatic insufficiency, Lewy body dementia, Parkinson's disease, neuroleptic malignant syndrome
		GHIH 28/4/2019	22-May-19

Drugs	Dosage	Adverse effects	Comments
Olanzapine (atypical antipsychotic)	2.5–5.0 mg once daily	Prolong QTc interval	Less frequent extrapyramidal side effects noted in some studies; some studies have suggested increased mortality in elderly with dementia or cardiovascular/cerebrovascular risk factors. Olanzapine not licensed for “acute psychosis
Risperidone (atypical Antipsychotic)	0.5 mg twice daily		
Quetiapine (atypical Antipsychotic)	25 mg twice daily		

Drugs	Dosage	Adverse effects	Comments
Lorazepam (benzodiazepine)	<p>0.5–1.0 mg oral every 4 h, (up to 3–4 mg in 24 h) (peak effect 120 min)</p> <p>Can be given 0.5–1.0 mg IM or iv (peak effect 10 min after iv)</p>	Can cause paradoxical excitation, oversedation, respiratory depression	<p>Second line agent—can be given as adjuvant to antipsychotic when ineffective. Reported to worsen delirium in clinical trials; useful in alcohol or sedative withdrawal, Lewy body dementia, parkinsonism, neuroleptic malignant syndrome</p> <p>im; iv,</p>

C. Treatment of underlying cause

- ▶ Surgical treatment of Subdural hematoma
- ▶ Treatment of infections–pneumonia
- ▶ Treatment of liver failure, renal failure, hyponatremia

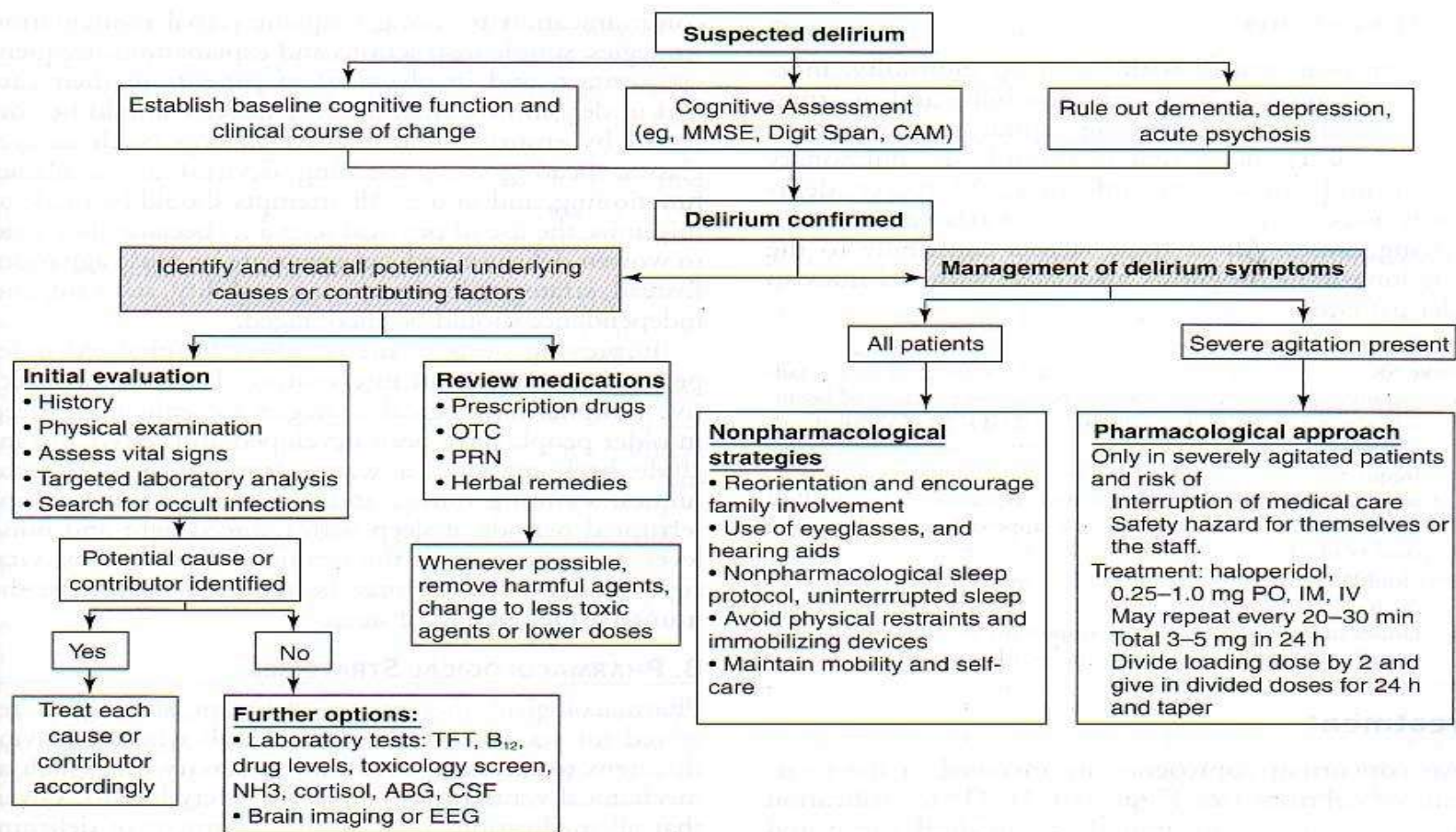
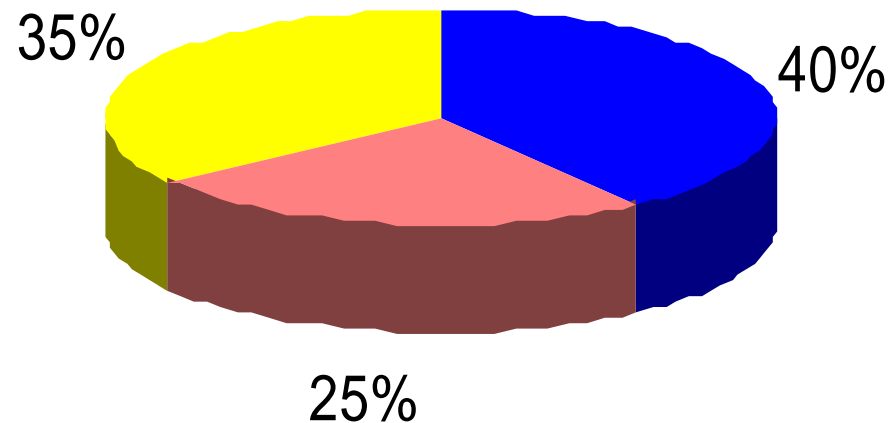


Figure 1 Algorithm for the evaluation of suspected delirium in the older adult. MMSE, Mini-Mental State Exam; CAM, Confusion Assessment Method; OTC, over-the-counter; PRN, as needed; TFT, thyroid function tests; B₁₂, vitamin B₁₂; NH₃, ammonia level; ABG, arterial blood gas; CSF, cerebrospinal fluid; EEG, electroencephalogram; PO, oral; IM, intramuscular; IV, intravenous.

Outcomes of Delirium



■ Recovery ■ Permanent Cognitive Impairment ■ Mortality

(even with complete recovery, 30% dementia within 3 years = decreased brain reserve)

Take Home Message

- ▶ Delirium is becoming more prevalent, because of the ageing population.
- ▶ Every elderly patient admitted with confusion should be presumed to have delirium until proven otherwise.
- ▶ Improve early detection using the CAM.
- ▶ Implement clinical guidelines, practice changes and education programmes for all medical, nursing and allied health staff.
- ▶ Education and support of families and carers is essential



References

- ▶ **Hazzard's Text book of Geriatric Medicine and Gerontology–Sixth Edition 2009**
- ▶ **Geriatric Care–A Textbook of Geriatrics and Gerontology – Third Edition– 2008**
- ▶ **Geriatric at your finger tip –20th Edition 2018**





Thank You

Questions ??????

